



Missouri Department of Natural Resources
Total Maximum Daily Load Information Sheet

Hickory Creek

Water Body Segment at a Glance:

County: Daviess
Nearby Cities: Jameson and Coffey
Length of impaired segment: 1.5 miles
Pollutant: Unknown
Source: None given
Water Body ID: 442



Scheduled for TMDL development: Approved by EPA Oct. 20, 2010

Description of the Problem

Beneficial uses of Hickory Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

Because Hickory Creek has been listed as impaired for unknown pollutants, no identifiable numeric criteria apply. However, all Missouri Streams are protected by the general criteria contained in Missouri's Water Quality Standards at 10 CSR 20-7.31(3). The particular criteria that apply to Hickory Creek state:

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.
- (G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

Background information and water quality data

The creek was first documented as impaired during the department's Visual/Benthic Low Flow Surveys in July 2000 and this was reported in the revised "Monitoring Report on 26 Waters". Evidence of impairment was primarily narrative rather than numeric, indicated by the presence of duckweed and dense filamentous algae. These observations supported the case that nutrient enrichment was negatively impacting the stream. "Rocks darkened by manganese" were also noted. However, no numeric data was collected to support these observations and the creek was listed for unknown pollutants.

A study was conducted in 2006 and 2007 by Versar, Inc. to determine what the stressors, or possible causes of impairment, were on Hickory Creek. This study found that the aquatic community was impaired (table below) and listed the following as stressors: low dissolved oxygen levels, increased silt and sediment in the stream, poor habitat quality and low/ altered flow regime.

Stream Condition Index Scores for Hickory Creek, Daviess County

Scores below 16 indicate impairment

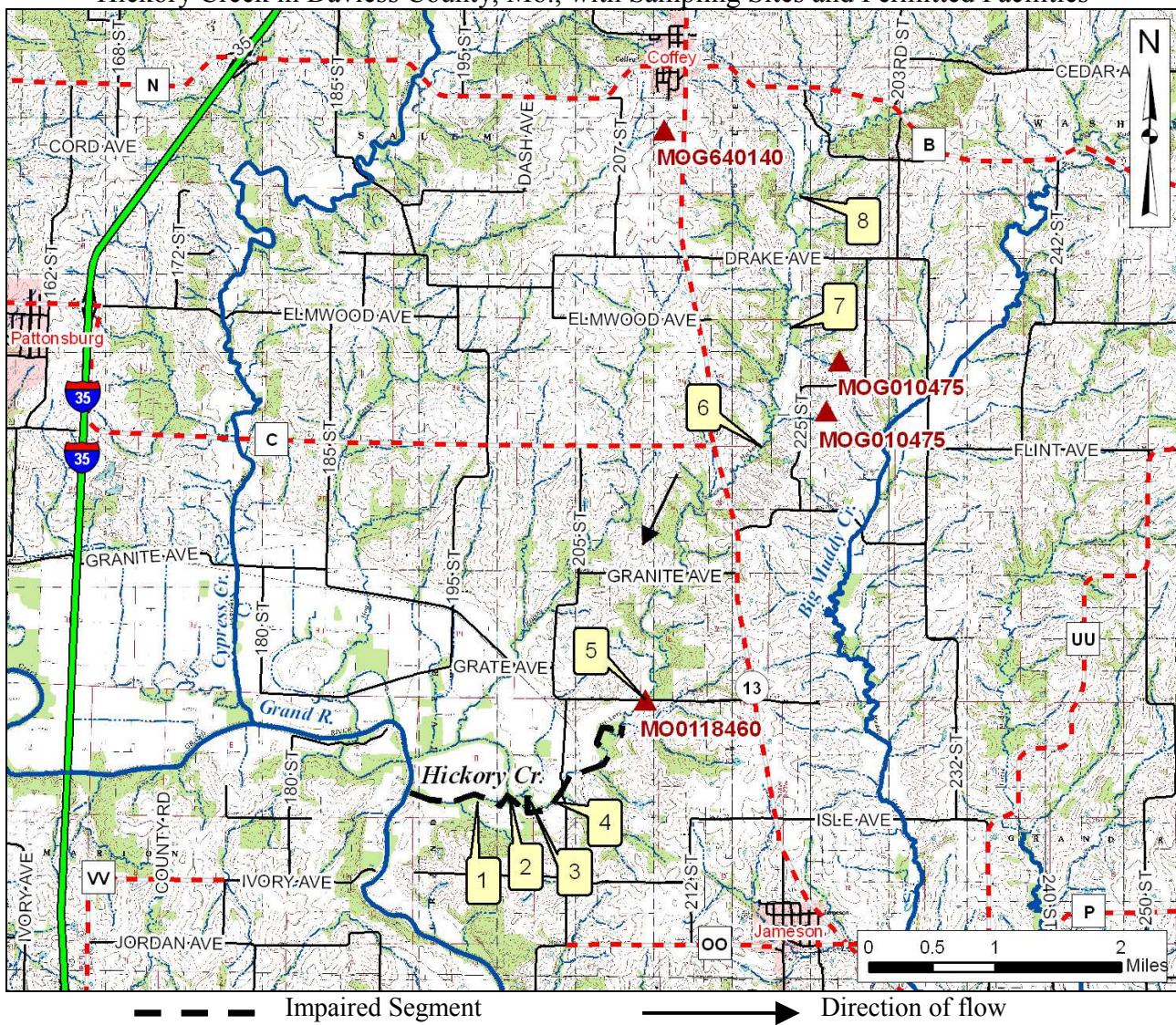
Org	Site	Date	Score
Versar Inc.	Hickory Cr.- 1	Fall 2006	14
Versar Inc.	Hickory Cr.- 1	Spring 2007	12
Versar Inc.	Hickory Cr.- 1	Fall 2007	10
Versar Inc.	Hickory Cr.- 2	Spring 2007	4
MDNR	Hickory Cr.- 1	Fall 2008	16
MDNR	Hickory Cr.- 1	Spring 2009	18
MDNR	Hickory Cr.- 2	Fall 2008	20
MDNR	Hickory Cr.- 2	Spring 2009	18

As a follow-up to the Versar study, the department conducted a bioassessment of Hickory Creek in 2008-09. The rainfall those years was above average and the SCI scores for invertebrate data were all 16 or higher (table above). Also, the dissolved oxygen levels rebounded in 2008-09 and were better than the state's criteria. However, the data for total suspended solids (sediment) and the nutrients of phosphorus and nitrogen from these studies and from other data provided by two permitted facilities in the watershed exceed regional ecosystem levels for creeks of this caliber. To address these, the TMDL is targeting sediment and nutrients.

Site list for the map shown on the following page:

Site Description
1 - Hickory Cr near mouth
2 - Hickory Cr MDNR bioassessment site 1, below 202 St.
3 - Hickory Cr below 202 St
4 - Hickory Cr MDNR bioassessment site 2, below 202 St.
5 - Hickory Cr at Harbor Ave
6 - Hickory Cr downstream of CG Hickory Cr (Site 15)
7 - Hickory Cr at CG Hickory Cr (Site 3)
8 - Hickory Cr downstream of CG Hickory Cr (Site 19)

Hickory Creek in Daviess County, Mo., with Sampling Sites and Permitted Facilities



For more information call or write:

Missouri Department of Natural Resources
 Water Protection Program
 P.O. Box 176, Jefferson City, MO 65102-0176
 1-800-361-4827 or 573-751-1300 office
 573-522-9920 fax
 Program Home Page: www.dnr.mo.gov/env/wpp/index.html